In the Specification:

[0066] It is significant that the LCM is the "least" common multiple, rather than some other common multiple, of the desired frequencies and the master clock. Making the LCM the "least" common multiple maximizes the flexibility with which the algorithm can distribute divisions among different tiers of dividers in the clocking system (i.e., first dividers 124 and second dividers 128). This is important because the Analog Master Clocks (AMC_0-AMC_3) in the Catalyst test system have an upper and a lower frequency limit. Therefore, the second dividers 128 (DA_L) must be chosen so that the desired frequencies $F_{DES\text{-}L}$ times the second dividers DA_L fall within the allowable range of the AMCs. In addition, if the LCM is greater than the maximum allowable ORC (2^{29}), no solution ~~can~~ set will enable the clocking system to precisely produce the desired frequencies. Finding the "least" common multiple thus affords the algorithm its highest probability for success.

[0074] In variable ORC mode, coherency grouping need not be considered because the flexibility of varying the ORC obviates the need for rounding. Since frequencies are not rounded, frequency ratios are preserved across all clocks, whether coherence is required or not.

[0074.1] Referring now to FIG. 11, the first three steps 1110-1114 for fixed ORC mode are closely related to steps 1010-1014 of FIG. 10. At step 1110, the algorithm seeks as before to find the least common multiple (LCM) of the desired frequencies and the frequency of the master clock, i.e., the LCM of A_0-A_3, C0, and 100 MHz. At step ~~1111~~1110, however, the algorithm also seeks to find a larger least common multiple, "BigLCM," of the desired frequencies and the ORC, i.e., the LCM of A_0-A_3, C0, and 50,000 THz. BigLCM is then used at step 1112, wherein the second dividers are chosen to minimize new factors beyond those already included in BigLCM. The factors of BigLCM are relevant, instead of those of LCM, to allow the algorithm to find, whenever possible, divider values that exactly produce the desired frequencies (i.e., without rounding--see below). Note that BigLCM is used only for minimizing new factors in step 1012. Once the new factors, if any, are determined, the algorithm calculates LumpLCM as the product of LCM any additional factors needed to realize the second dividers.